Appendix 2: Sample Site Identification, Regional Setting, Catchment and Reach Size Data Sheet

Investigator: _____ Date: _____

Position Identification

Stream name/Study site name: _____Sweet Run_____

Latitude _____ Longitude _____

Elevation _____ Grid Reference_____

Zone _____ UTM _____

County _____ State _____

USGS Topographic Map Name _____

Water Body Coding

USGS catalog unit (HUC-8, sub-basin, EPA watershed)

Division	HUC	Name	Area
Region			
Subregion			
Basin			
Subbasin			
Watershed			
Subwatershed			

USEPA reach code _____ Reach Length _____

Water Impairments: _____

Regional Setting

Physiographic Province code/name: _____
Region code/name: _____
Area code/name: _____
Hydrogeomorphic region: _____

Ecoregions:

Omernik Level I _____

Omernik Level II _____

Omernik Level III _____

Omernik Level IV _____

Catchment Basin Characteristics

Catchment area _____

Bankfull discharge _____

Cross-sectional area _____

Width _____

Mean depth _____

*Reach type (e.g., Rosgen classification) _____

Reach size:

*Average bankfull width _____

Strahler Stream Order _____

Link Magnitude _____

D-Link _____

* Stream classification and average bankfull width will be determined after field data collection.

Appendix 3: Geomorphic Properties Exercises

Once the catchment divide is drawn on a map and the area has been estimated, the geomorphic properties can be estimated, measured, or computed. Each of the geomorphic properties listed below includes a definition and explanation of its importance to catchment characterization. The downstream boundary of the catchment is the sample site.

1. **Catchment length:** Catchment length is estimated as the straight-line distance between the stream site and the drainage divide nearest to the source of the main stream [see "Main Channel Slope" description to find out how to delineate the main stream}. Catchment length is used to calculate drainage shape.

   ANSWER: _____

2. **Catchment relief:** Catchment relief is the difference in elevation between the highest and lowest points in the catchment. It controls the stream gradient and therefore influences flood patterns and the amount of sediment that can be transported. Sediment load increases exponentially with catchment relief.

   ANSWER: _____

3. **Catchment relief ratio:** The catchment relief ratio index is the catchment relief divided by the catchment length. It is useful when comparing catchments of different sizes because it standardizes the change in elevation over distance.

   ANSWER: _____

4. **Catchment surface storage:** The percentage of the catchment covered in lentic and impounded water bodies, including wetlands (optional), reflects the surface storage capacity of the catchment. Determine the catchment surface storage by measuring the area of each lake or impounded water body. Wetland areas will have to be estimated because the borders are not delineated on topographic maps. Add all water body and wetland areas and divide this sum by the drainage area.

   ANSWER: _____

5. **Drainage density:** An index of the length of stream per unit area of catchment is calculated by dividing the drainage area by the total stream length [see page 2]. This ratio represents the amount of stream necessary to drain the catchment. High drainage density may indicate high water yield and sediment transport, high flood peaks, steep hills, low suitability for agriculture, and high difficulty of access.

   ANSWER: _____

6. **Drainage shape:** An index of drainage shape is computed as a unit less dimension of drainage area divided by the square of catchment length. It describes the elongation of the catchment and is useful for comparing catchments. If two catchments have the same area, the more elongated one will tend to have smaller flood peaks but longer lasting flood.

   ANSWER: _____

7. **Main channel slope:** Main channel slope is an estimate of the typical rate of elevation change along the main channel that drains the catchment. This measurement is often related to peak flow magnitude and flood volume. Estimate the main channel slope by measuring the length of the main channel from the study site to the mapped source of the main stream. At each stream channel bifurcation, follow the fork with either the higher stream order number or the longer pathway to a stream source. Mark off 10% and 85% of the main channel length on the map. Estimate the elevation in meters at the 10% and 85% distance points, using the contour lines on the topographic map. Compute the main channel slope as follows:

   Slope = (elevation at 85% length – elevation at 10% length) / 0.75 (main channel length).

   ANSWER: _____

8. **Total stream length:** Total stream length is the sum of the lengths of all perennial streams within a catchment as shown on a topographic map. Determine the total stream length by measuring the length of each perennial stream section with a map measurer. Sum these individual stream lengths. The summed stream lengths determine the total amount of stream habitat in a catchment and the availability of sediment for transport.

   ANSWER: _____